

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Kazumi Fujimoto
Serial Number: 10/575,283
Filing Date: April 11, 2006
Examiner/Group Art Unit: N. Bitar/2624
Title: APPARATUS AND METHOD FOR
AUTOMATICALLY DETECTING OBJECTS

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

M.S. Issue Fee
Commissioner for Patents
P. O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

In the Notice of Allowance mailed March 9, 2010, the Examiner indicates that claims 1-30 are allowed and provides certain statements with respect to the alleged teachings of the cited references. Applicant does not comment on those statements as they are unrelated to the reasons for allowing the pending claims, and this lack of comment is not to be construed as agreement with the Examiner's characterizations of the teachings. With respect to the allowed claims, the Examiner's statement implies that the inventiveness lies in the recited language when instead it is the combination of features in each of the independent claims that renders those claims allowable.

Applicant respectfully submit that claim 1 is allowable over the prior art because it fails to teach or suggest, in combination, an apparatus for detecting objects in one or more images captured by an image pickup device mounted on a vehicle, comprising memory on which is stored pixels of at least one image captured by the image pickup device, and a controller operatively coupled to the memory and adapted to compute velocity information for each pixel in an image using a sequential series of images, extract from the image extracted pixels having a velocity component based on the velocity information,

wherein the velocity component comprises a movement direction and a movement velocity in a lateral direction; define regions for detecting a road boundary, detect oblique lines made of pixels having a velocity component based on grouping those extracted pixels having a velocity component in the regions, and generate a signal indicative of a road boundary in the image based on the oblique lines.

Dependent claims 2-9 are allowable for at least this reason.

Independent claim 10 is allowable in that the prior art fails to teach or suggest a vehicle comprising a camera mounted including an image-pickup element generating as output a plurality of images, memory on which is stored the plurality of images generated by the image pickup element, and a controller operatively coupled to the memory and adapted to compute velocity information for each pixel in an image using a sequential series of images, extract those pixels having a velocity component based on the velocity information, wherein the velocity component comprises a movement direction and a movement velocity in a lateral direction, define regions for detecting a road boundary, detect oblique lines based on grouping those extracted pixels having a velocity component in the regions, and generate a signal indicative of a road boundary in the image based on the oblique lines.

Dependent claims 11-18 are allowable for at least this reason.

The prior art also fails to teach or suggest an apparatus for detecting objects in one or more images captured by an image pickup device mounted on a vehicle and traveling on a road as claimed in independent claim 19, which comprises velocity information computing means for processing a sequential series of images to compute velocity information for each pixel in an image, pixel extracting means for extracting pixels having a velocity component based on the velocity information computed by the velocity information computing means, wherein the velocity component comprises a movement direction and a movement velocity in a lateral direction, defining means for defining regions for detecting a road boundary, oblique line detecting means for detecting oblique lines made of pixels having a velocity component and extracted by the pixel extracting means by grouping those extracted pixels having the velocity component in the regions, and boundary line detecting means for detecting at least one boundary line on the road present in the image on the basis of the oblique line detected by the oblique line detecting means.

Dependent claims 20-24 are allowable for at least this reason.

Independent claim 25 is allowable over the prior art in that the prior art fails to teach or suggest a method for detecting objects in an image captured of the pathway of a vehicle, comprising computing velocity information for each pixel in the image using a sequential series of images, extracting from the image extracted pixels having a velocity component based on the velocity information, wherein the velocity component comprises a movement direction and a movement velocity in a lateral direction, defining regions for detecting a road boundary, detecting oblique lines made of pixels having velocity component by grouping the extracted pixels having a velocity component in the regions, and detecting one or more boundary lines on the vehicle pathway in the image from the oblique lines.

Dependent claims 26-30 are allowable for at least this reason.

If the Examiner has any questions or comments regarding this paper, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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